WHAT IS CLAIMED IS:

1. A signal processing device of a multiplex communication, comprising:

modulating means for modulating a plurality of information signals of multiplex communication sent in a transmission channel to produce a plurality of modulated signals;

waveform reshaping means of first and second groups for reshaping waveforms of the modulated signals to produce a plurality of reshaped modulation signals;

selecting means for selecting the waveform reshaping means of the first group or the waveform reshaping means of the second group according to a changeover signal and receiving the modulated signals produced by the modulating means;

multiplying means of the first and second groups, which correspond to the waveform reshaping means of the first and second groups respectively, for multiplying each reshaped modulation signal produced by the waveform reshaping means of the corresponding group by a gain signal for each of the first and second groups to produce a plurality of electric power controlled signals;

adding means for adding together the electric power controlled signals produced by the multiplying means of the first and second groups to produce a composite modulation signal corresponding to a transmission signal; and

signal generating means for generating the changeover signal, which indicates the changeover from the waveform reshaping means of the first group corresponding to the reception of the modulated signals to the waveform reshaping means of the second group, in cases where an electric power gain value of the transmission signal is changed, sending the changeover signal to the selecting means, generating a new gain signal of which a new electric power gain value is changed

from an electric power gain value of the gain signal, sending the new gain signal to the multiplying means corresponding to the waveform reshaping means of the second group, and successively sending the gain signal having the electric power gain value to the multiplying means corresponding to the waveform reshaping means of the first group during a prescribed time period after the change of the gain signal to the new gain signal.

2. A signal processing device of a multiplex communication according to claim 1, wherein the gain signal having the electric power gain value is successively sent to the multiplying means corresponding to the waveform reshaping means of the first group by the signal generating means until a transient response of the waveform reshaping means of the first group is completed.

3. A signal processing device of a multiplex communication according to claim 1, wherein the changeover signal indicating the changeover of the waveform reshaping means is periodically generated by the signal generating means and is sent to the selecting means.

4. A signal processing device of a multiplex communication according to claim 1, wherein the changeover signal indicating the changeover of the waveform reshaping means is sent to the selecting means by the signal generating means in response to the reception of an instruction which indicates the change of the electric power gain value of the transmission signal.

5. A signal processing device of a multiplex communication according to claim 1, wherein the information signals sent in a plurality of transmission channels are modulated by the modulating means to produce

the modulated signals corresponding to a plurality of systems.

6. A signal processing device of a multiplex communication according to claim 1, wherein the electric power controlled signals of the first and second groups are added together by the adding means to produce the composite modulation signal corresponding to the transmission signal which is transmitted from a mobile station to a base station.

7. A signal processing device of a multiplex communication, comprising:

modulating means for performing a spreading modulation for a plurality of information signals sent in a transmission channel according to codes to produce a plurality of modulated signals for CDMA communication;

waveform reshaping means of first and second groups for reshaping waveforms of the modulated signals to produce a plurality of reshaped modulation signals;

selecting means for selecting the waveform reshaping means of the first group or the waveform reshaping means of the second group according to a changeover signal and receiving the modulated signals output from the modulating means;

multiplying means of the first and second groups, which correspond to the waveform reshaping means of the first and second groups respectively, for multiplying each reshaped modulation signal produced by the waveform reshaping means of the corresponding group by a gain signal for each of the first and second groups to produce a plurality of electric power controlled signals;

adding means for adding together the electric power controlled signals produced by the multiplying means of the first and second groups to produce a composite modulation signal corresponding to a

transmission signal; and

signal generating means for sending the changeover signal, which indicates the changeover from the waveform reshaping means of the first group corresponding to the reception of the modulated signals to the waveform reshaping means of the second group , to the selecting means in cases where an electric power gain value of the transmission signal is changed, generating a new gain signal of which a new electric power gain value is changed from an electric power gain value of the gain signal, sending the new gain signal to the multiplying means corresponding to the waveform reshaping means of the second group, and successively sending the gain signal having the electric power gain value to the multiplying means corresponding to the waveform reshaping means of the first group during a prescribed time period after the change of the gain signal to the new gain signal.

8. A signal processing device of a multiplex communication according to claim 7, wherein the gain signal having the electric power gain value is successively sent to the multiplying means corresponding to the waveform reshaping means of the first group by the signal generating means until a transient response of the waveform reshaping means of the first group is completed.

9. A signal processing device of a multiplex communication according to claim 7, wherein the changeover signal indicating the changeover of the waveform reshaping means is periodically generated by the signal generating means and is sent to the selecting means.

10. A signal processing device of a multiplex communication according to claim 7, wherein the changeover signal indicating the changeover of the waveform reshaping means is generated and sent to the selecting

means by the signal generating means in response to the reception of an instruction which indicates the change of the electric power gain value of the transmission signal.

11. A signal processing device of a multiplex communication according to claim 7, wherein the spreading modulation is performed for the information signals sent in a plurality of transmission channels by the modulating means.

12. A signal processing device of a multiplex communication according to claim 7, wherein the electric power controlled signals of the first and second groups are added together by the adding means to produce the composite modulation signal corresponding to the transmission signal which is transmitted from a mobile station to a base station corresponding to the CDMA communication.

13. A signal processing method of a multiplex communication, comprising:

a step of modulating a plurality of information signals of multiplex communication sent in a transmission channel to produce a plurality of modulated signals;

a step of reshaping waveforms of the modulated signals in waveform reshaping means of first and second groups;

a step of selecting the waveform reshaping means of the first group or the waveform reshaping means of the second group according to a changeover signal;

a step of receiving the modulated signals;

a step of multiplying, in multiplying means of the first and second groups which correspond to the waveform reshaping means of the first and second groups respectively, each of a plurality of reshaped

modulation signals received from the waveform reshaping means of the corresponding group by a received gain signal for each of the first and second groups to produce a plurality of electric power controlled signals of the first and second groups;

a step of adding together the electric power controlled signals of the first and second groups to produce a composite modulation signal corresponding to a transmission signal;

a step of generating the changeover signal, which indicates the changeover from the waveform reshaping means of the first group corresponding to the reception of the modulated signals to the waveform reshaping means of the second group, in cases where an electric power gain value of the transmission signal is changed, to select the waveform reshaping means of the second group;

a step of generating a new gain signal of which a new electric power gain value is changed from an electric power gain value of the gain signal;

a step of sending the new gain signal to the multiplying means corresponding to the waveform reshaping means of the second group; and

a step of successively sending the gain signal having the electric power gain value to the multiplying means corresponding to the waveform reshaping means of the first group during a prescribed time period after the change of the gain signal to the new gain signal.

14. A signal processing method of a multiplex communication according to claim 13, wherein the gain signal having the electric power gain value is successively sent to the multiplying means corresponding to the waveform reshaping means of the first group in the step of generating the changeover signal and the gain signal until a transient response of the waveform reshaping means of the first group is

completed.

15. A signal processing method of a multiplex communication according to claim 13, wherein the changeover signal indicating the changeover of the waveform reshaping means is periodically generated by the signal generating means in the step of generating the changeover signal and the gain signal.

16. A signal processing method of a multiplex communication according to claim 13, wherein the changeover signal indicating the changeover of the waveform reshaping means is sent out to select the waveform reshaping means of the second group in the step of generating the changeover signal and the gain signal in response to the reception of an instruction which indicates the change of the electric power gain value of the transmission signal.

17. A signal processing method of a multiplex communication according to claim 13, wherein the information signals sent in a plurality of transmission channels are modulated in the step of producing the modulated signals.

18. A signal processing method of a multiplex communication according to claim 13, wherein the electric power controlled signals of the first and second groups are added together, in the step of producing the composite modulation signal, to produce the composite modulation signal corresponding to the transmission signal which is transmitted from a mobile station to a base station.

19. A signal processing method of a multiplex communication according to claim 13, wherein a spreading modulation is performed for the

information signals sent in the transmission channel according to codes in the step of producing the modulated signals to produce a plurality of modulated signals for CDMA communication.

20. A signal processing method of a multiplex communication according to claim 18, wherein the composite modulation signal corresponding to the transmission signal, which is transmitted from a mobile station to a base station corresponding to the CDMA communication, is produced in the step of producing the composite modulation signal.